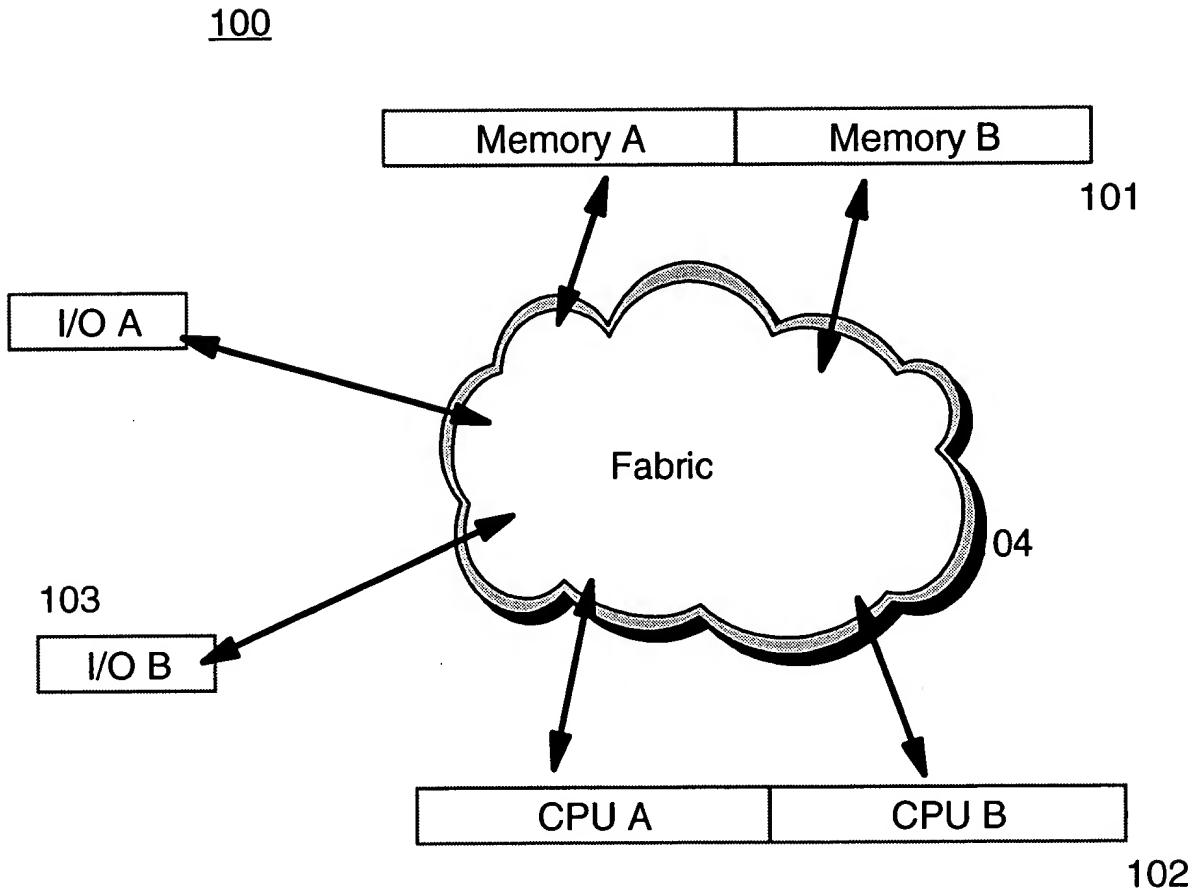

Figure 1

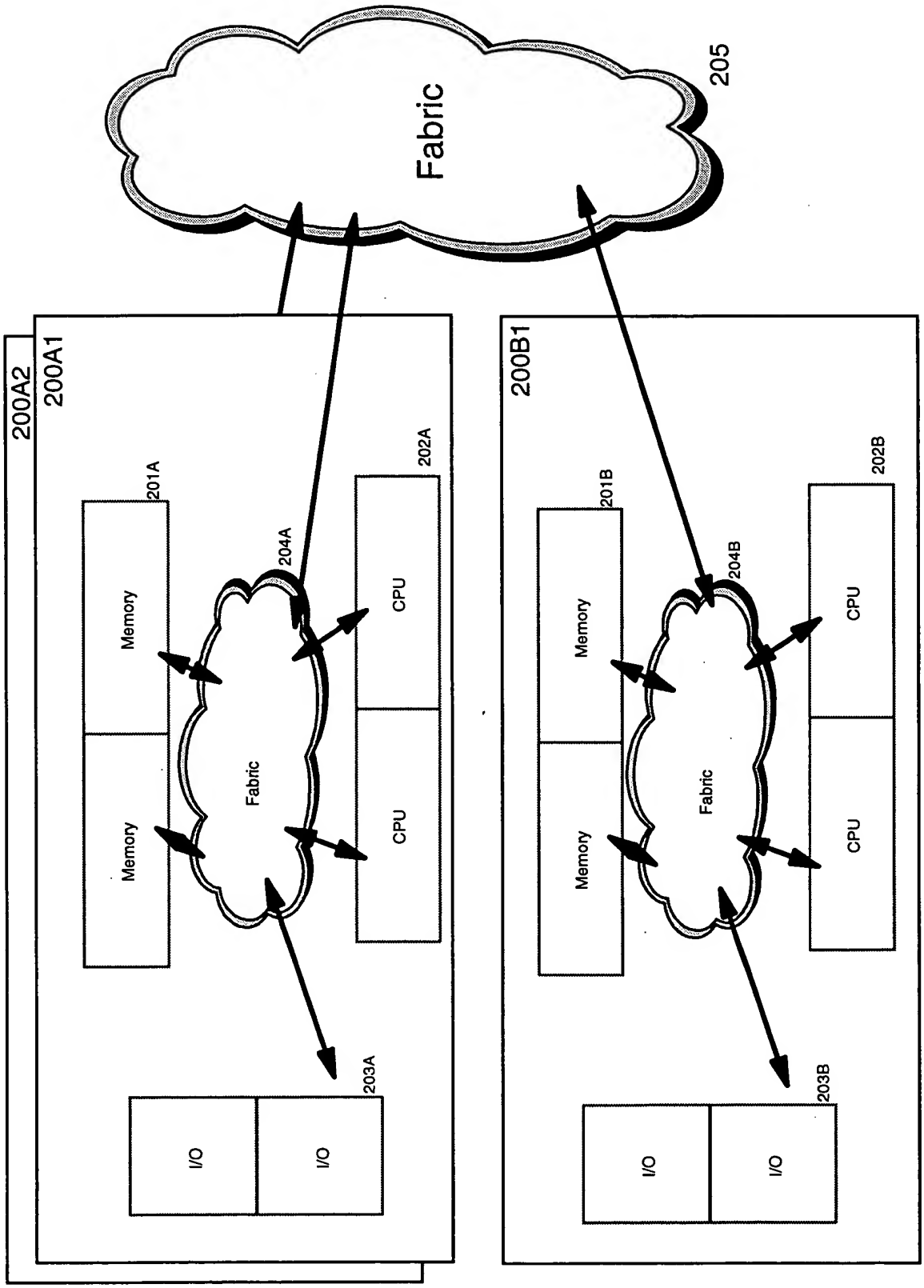
Fabric
205
200A2
200A1
Memory
201A
Memory
Fabric
204A
CPU
202A
CPU
I/O
I/O
203A
200B1
Memory
201B
Memory
Fabric
204B
CPU
202B
CPU
I/O
I/O
203B

Figure 2

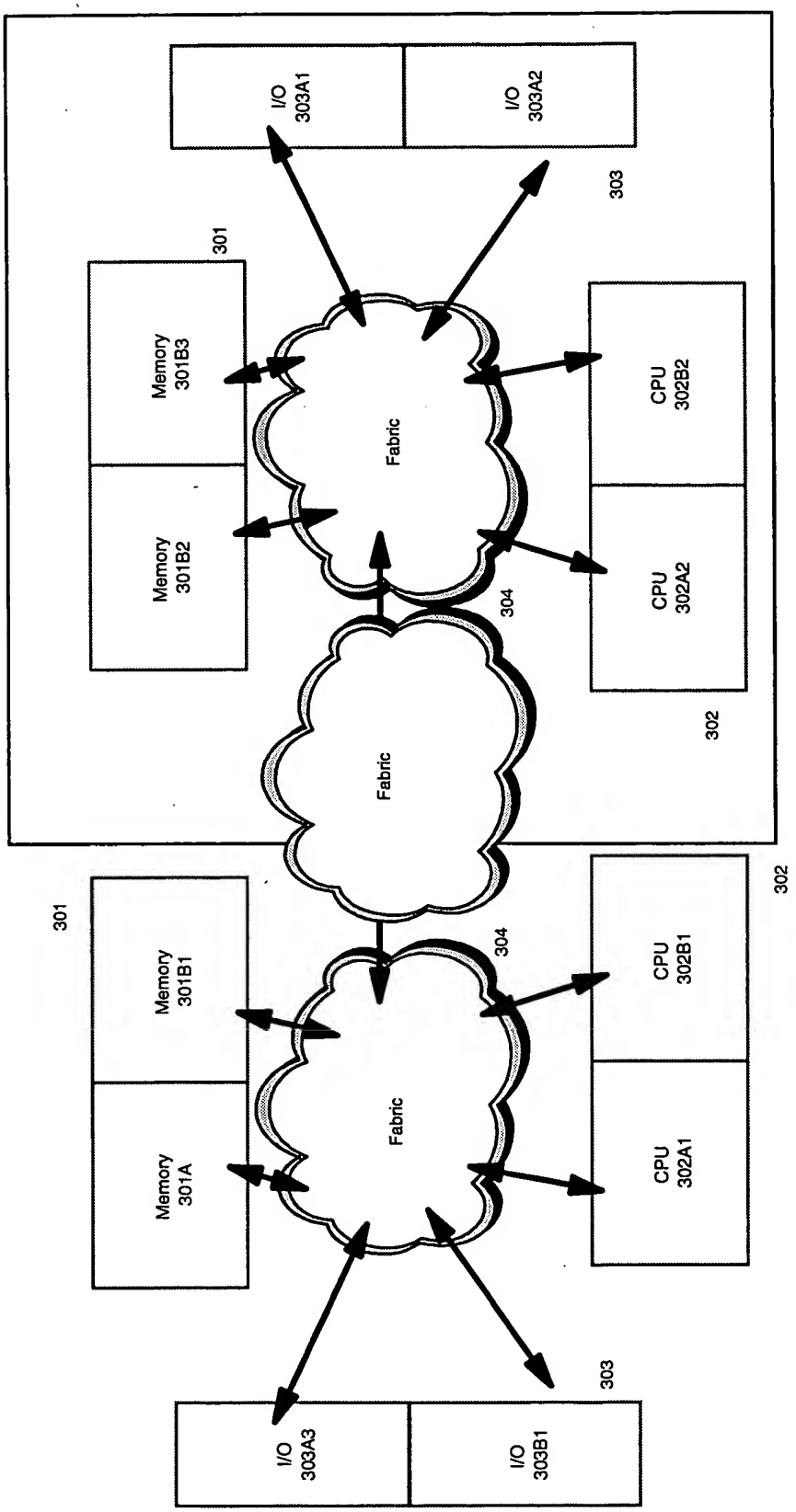
I/O 303A1
I/O 303A2
303
301
Memory 301B3
Memory 301B2
Fabric
CPU 302B2
CPU 302A2
304
302
Fabric
301
Memory 301B1
Memory 301A
304
Fabric
CPU 302B1
CPU 302A1
302
303
I/O 303A3
I/O 303B1

Figure 3

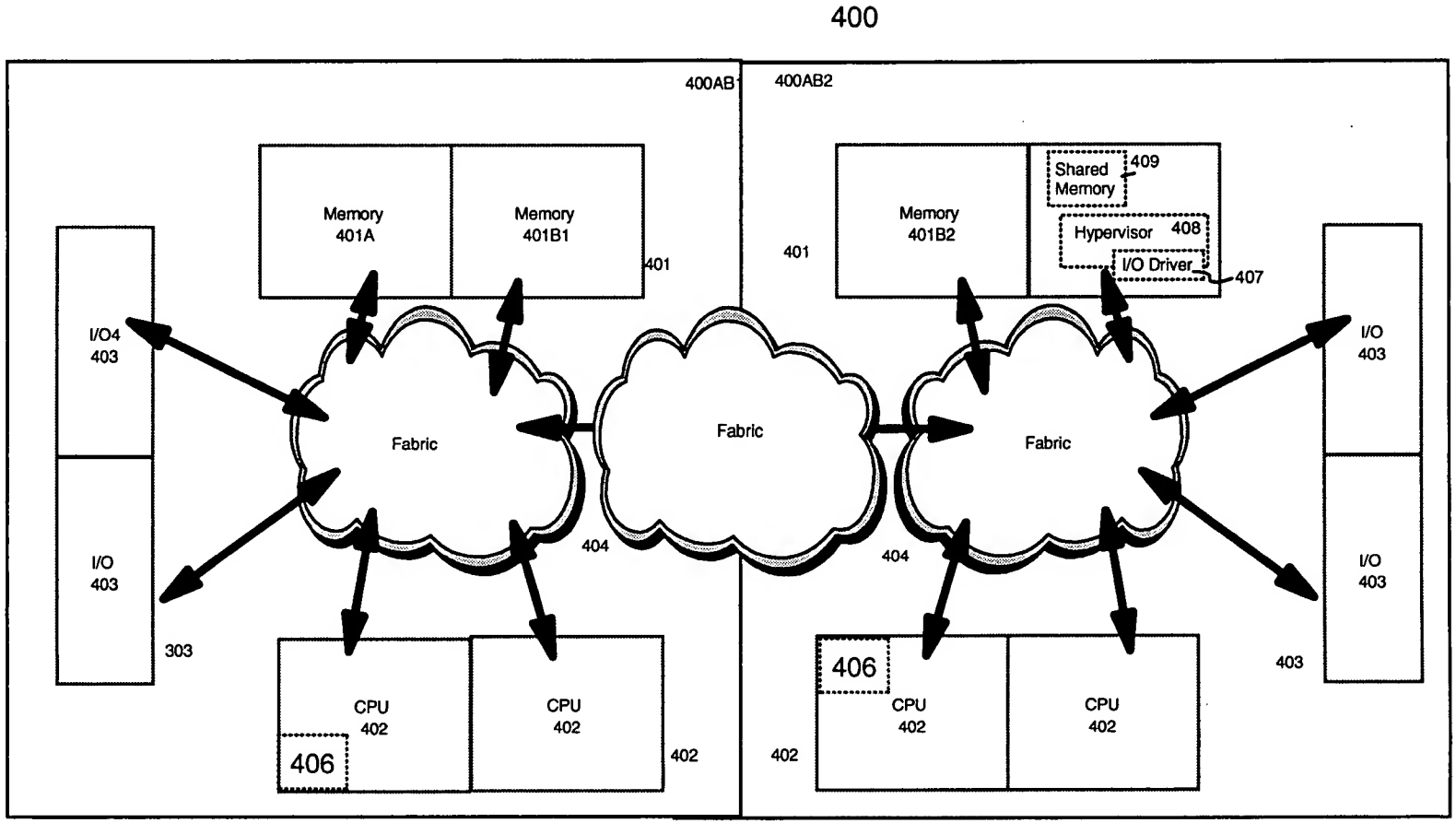
400
400AB
400AB2
Memory
401A
Memory
401B1
401
Memory
401B2
Shared
Memory
409
Hypervisor
408
I/O Driver
407
I/O4
403
I/O
403
303
Fabric
Fabric
Fabric
404
404
I/O
403
I/O
403
403
CPU
402
406
CPU
402
402
406
CPU
402
CPU
402
402

Figure 4

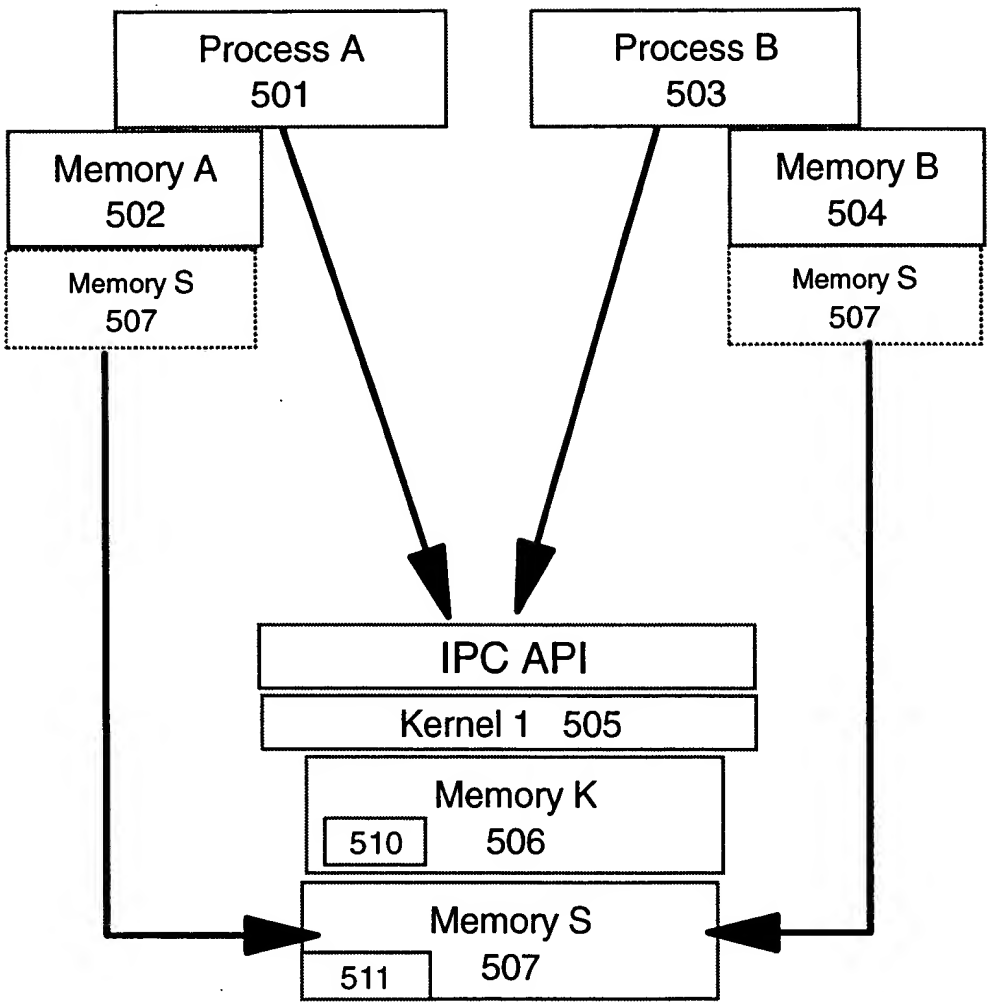
Process A
501
Process B
503
Memory A
502
Memory B
504
Memory S
507
Memory S
507
IPC API
Kernel 1 505
Memory K
510
506
Memory S
511
507

Figure 5

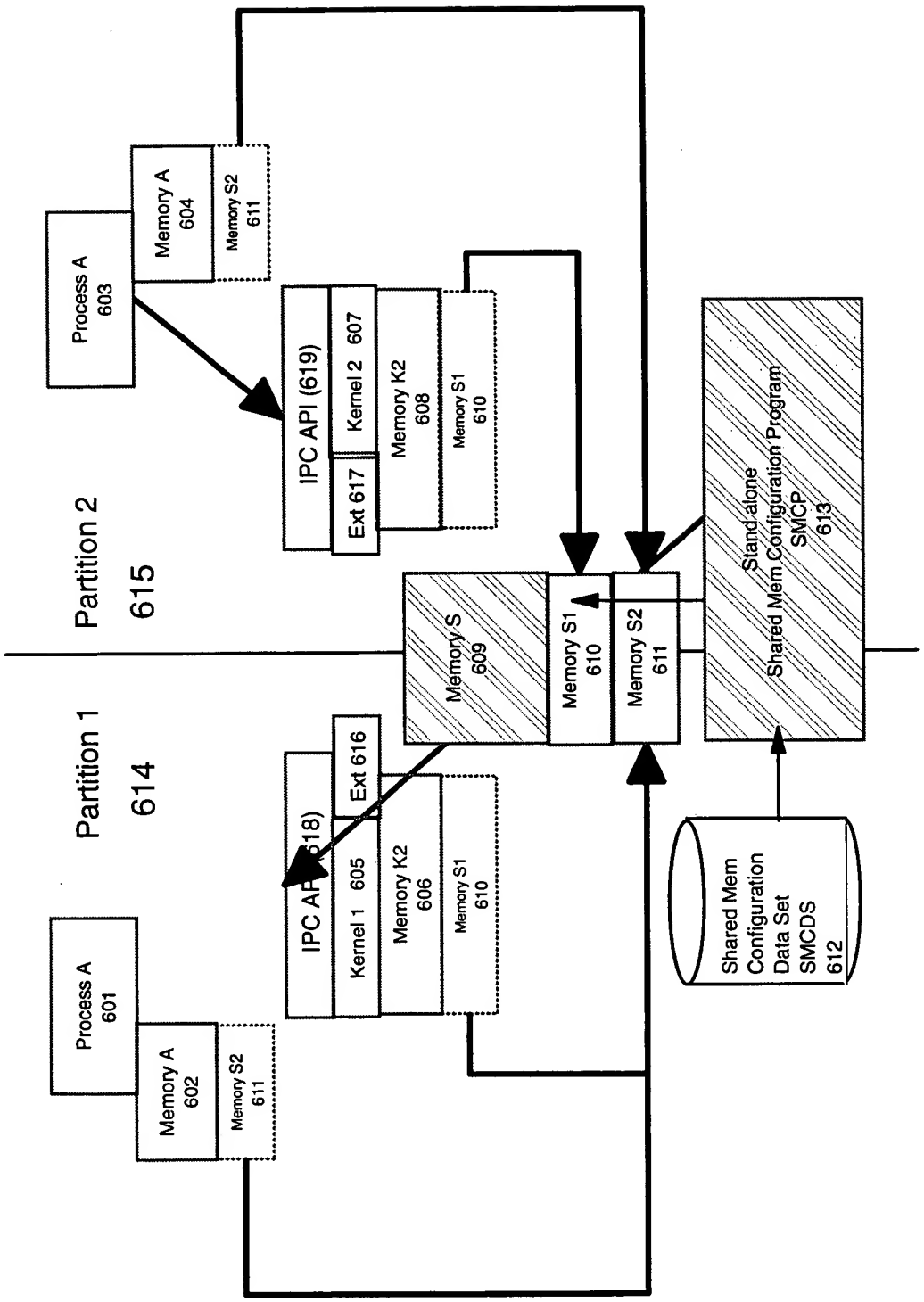
Partition 2
615
Process A
603
Memory A
604
Memory S2
611
IPC API (619)
Ext 617
Kernel 2 607
Memory K2
608
Memory S1
610
Partition 1
614
Process A
601
Memory A
602
Memory S2
611
IPC API (618)
Ext 616
Kernel 1 605
Memory K2
606
Memory S1
610
Memory S
609
Memory S1
610
Memory S2
611
Stand-alone
Shared Mem Configuration Program
SMCP
613
Shared Mem
Configuration
Data Set
SMCDS
612

Figure 6

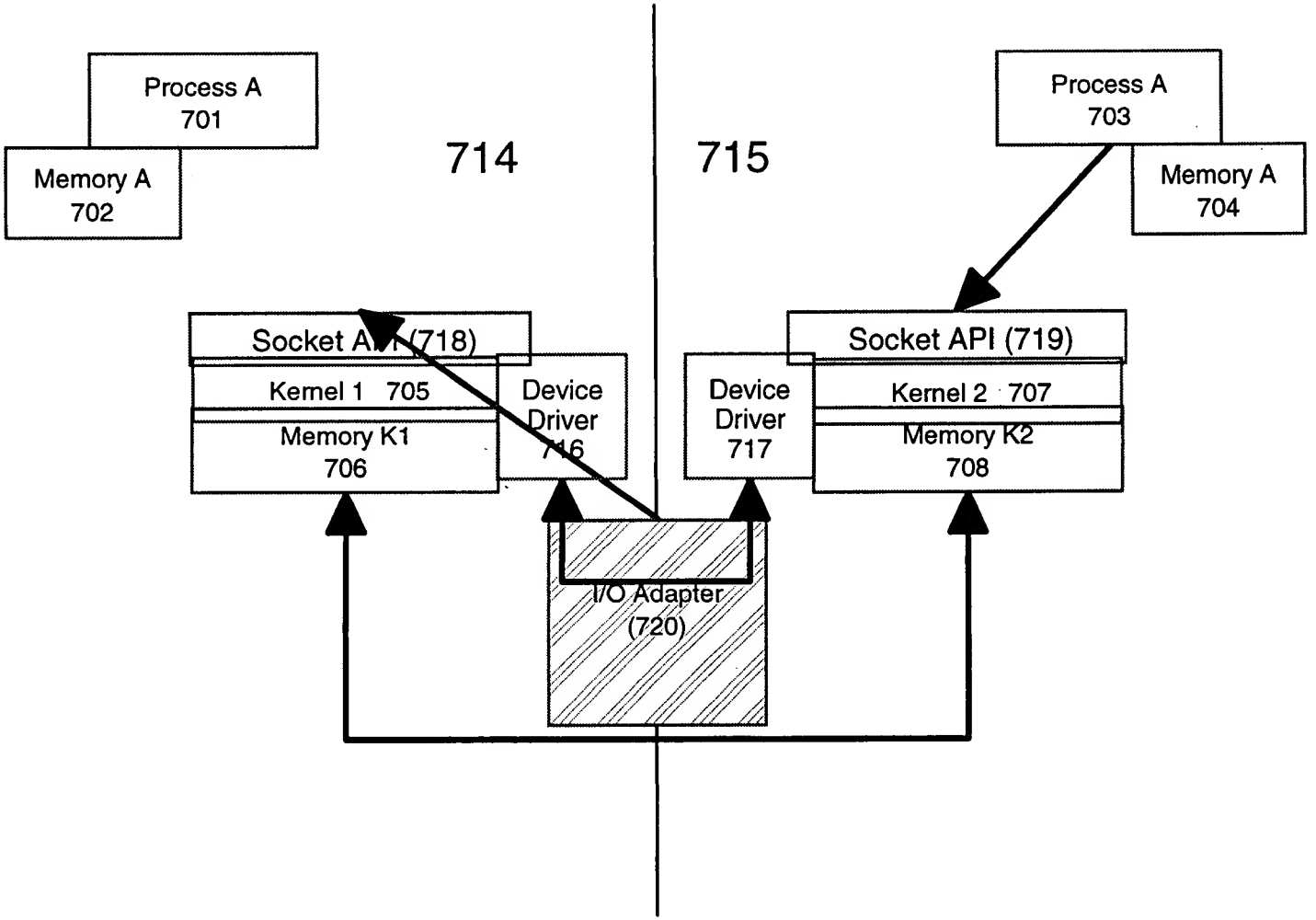
Process A
701
Memory A
702
714
715
Process A
703
Memory A
704
Socket API (718)
Kernel 1 705
Memory K1
706
Device
Driver
716
Device
Driver
717
Socket API (719)
Kernel 2 707
Memory K2
708
I/O Adapter
(720)

Figure 7A

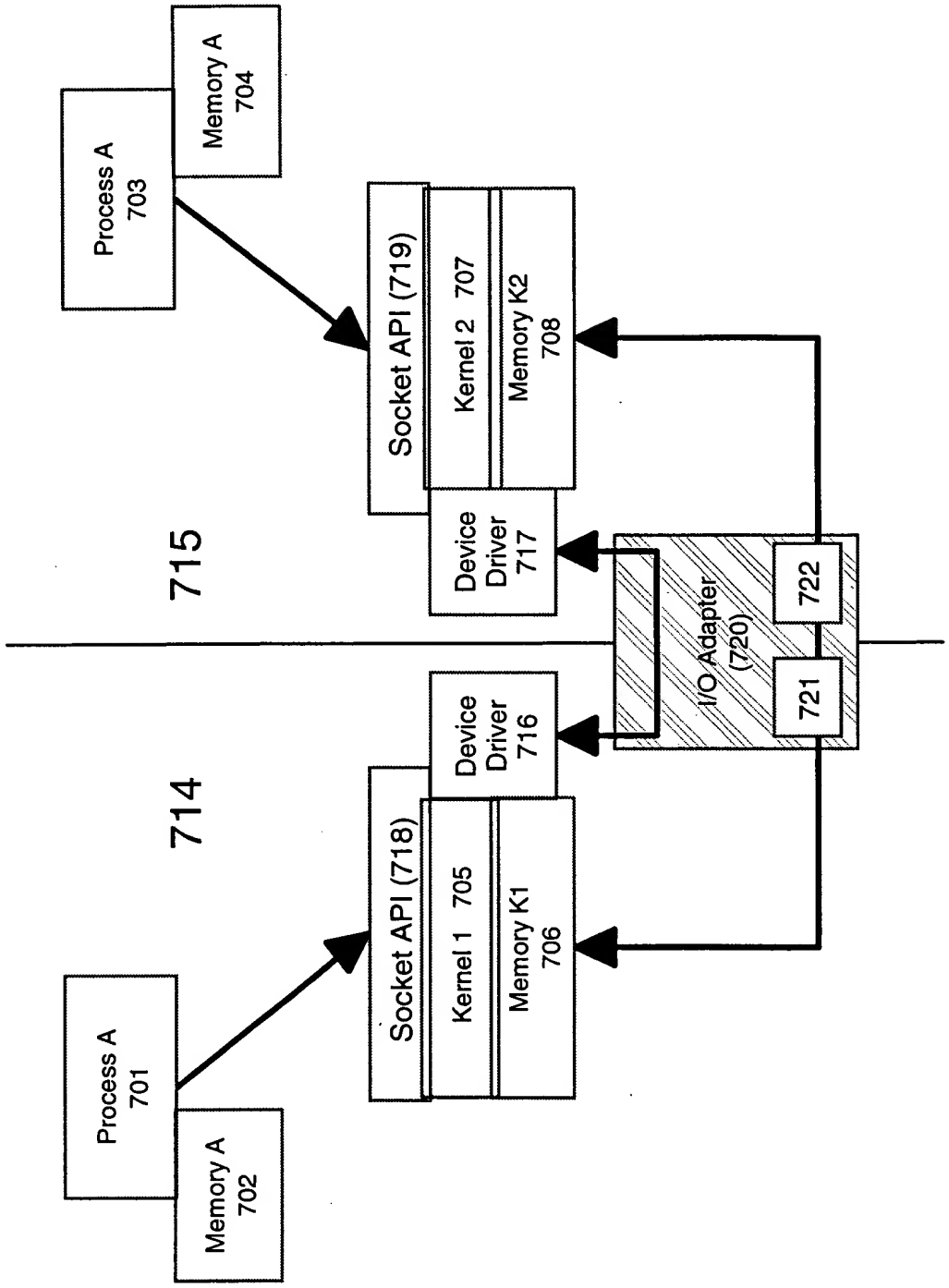
Process A
703
Memory A
704
Socket API (719)
Kernel 2 707
Memory K2
708
Device
Driver
717
715
Process A
701
Memory A
702
Socket API (718)
Kernel 1 705
Memory K1
706
Device
Driver
716
714
I/O Adapter
(720)
722
721

Figure 7B

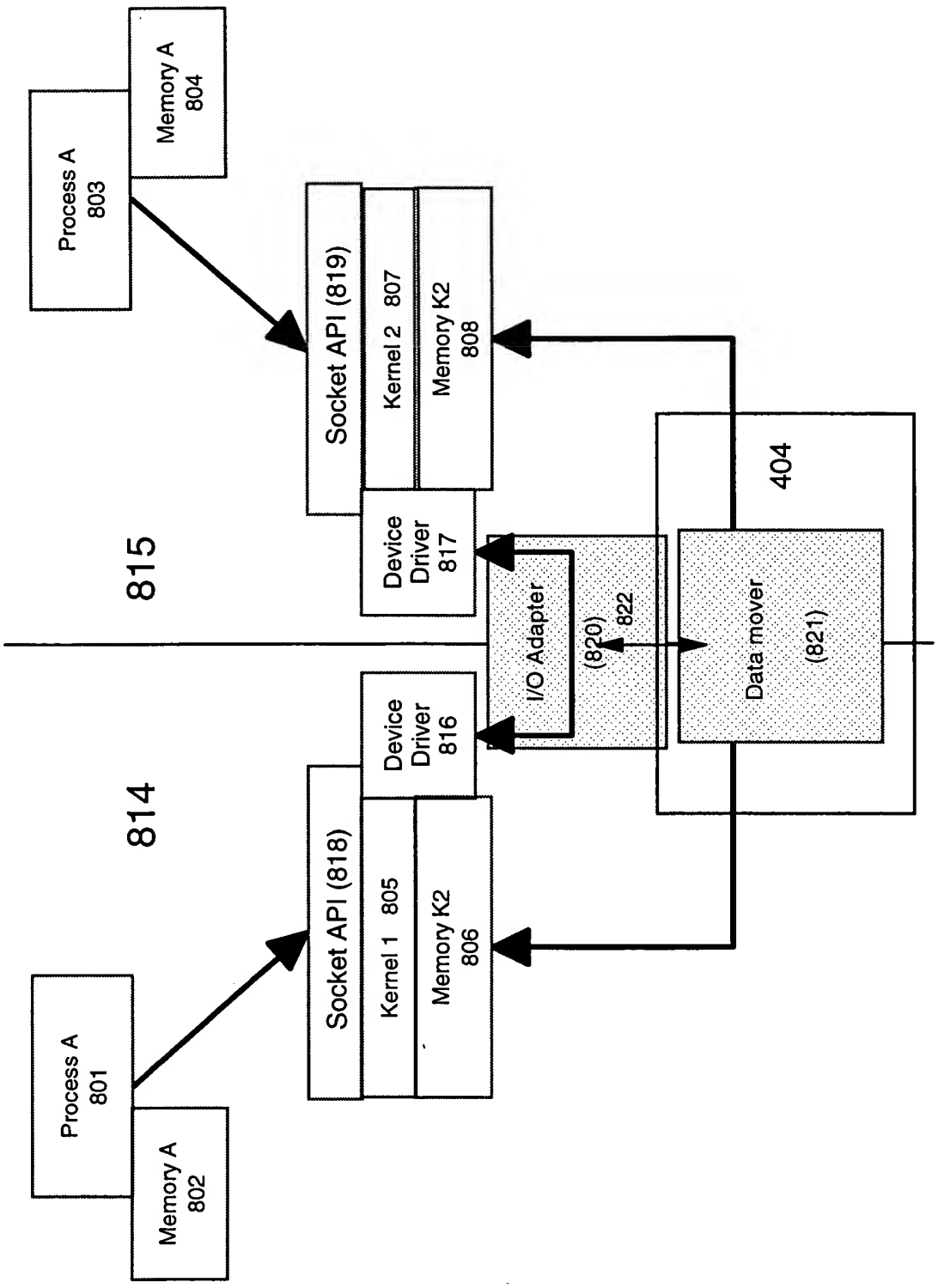
Process A
801
Memory A
802
Process A
803
Memory A
804
814
815
Socket API (818)
Kernel 1 805
Memory K2
806
Device
Driver
816
Socket API (819)
Kernel 2 807
Memory K2
808
Device
Driver
817
I/O Adapter
(820)
822
Data mover
(821)
404

Figure 8

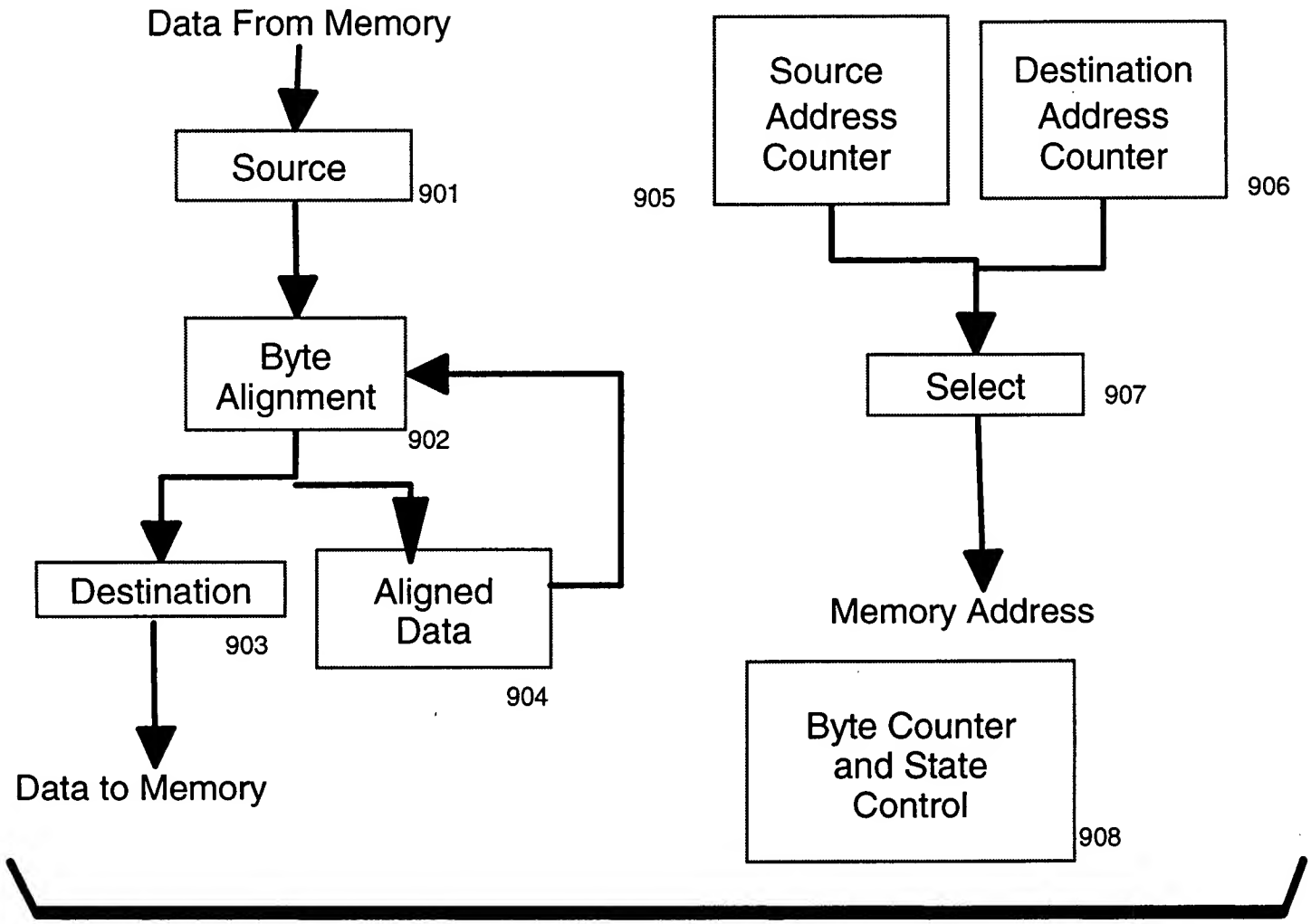
Data From Memory
Source
901
Byte Alignment
902
Destination
903
Aligned Data
904
Data to Memory
905
Source Address Counter
Destination Address Counter
906
Select
907
Memory Address
Byte Counter and State Control
908

Figure 9

1000

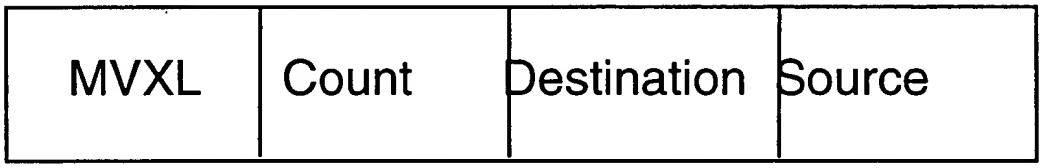

Figure 10

1101. User calls Device Driver
- Supplies
  - Source Network ID
  - Source Offset
  - Destination Network ID

1102. Device driver transfers addresses to Adapter
1103. Adapter Translates Addresses
- Looks up Phyical Base addresses from ID's (Table Lookup)
- Obtains Lock and current Destination Offset
- Adds offsets
- Checks bounds

1104. Adapter loads count and addresses in registers
1105. Adapter executes Data Move
1106. Adapter Frees Lock
1107. Adapter notifies device Driver which "Returns" to user

Figure 11

1201. User calls Device Driver
- Supplies
  - Source Network ID
  - Source Offset
  - Destination Network ID

1202. Device driver sends addresses to adapter

1203. Adapter Translates
- Looks up Phyical Base addresses from ID's (Table Lookup)
- Obtains Lock and current Destination Offset*
- Adds offsets
- Checks bounds
- Returns Lock and Physical addresses to Device Driver

1204. Device Driver executes Data Move

1205. Device Driver Frees Lock

1206. Device Driver Returns

Figure 12

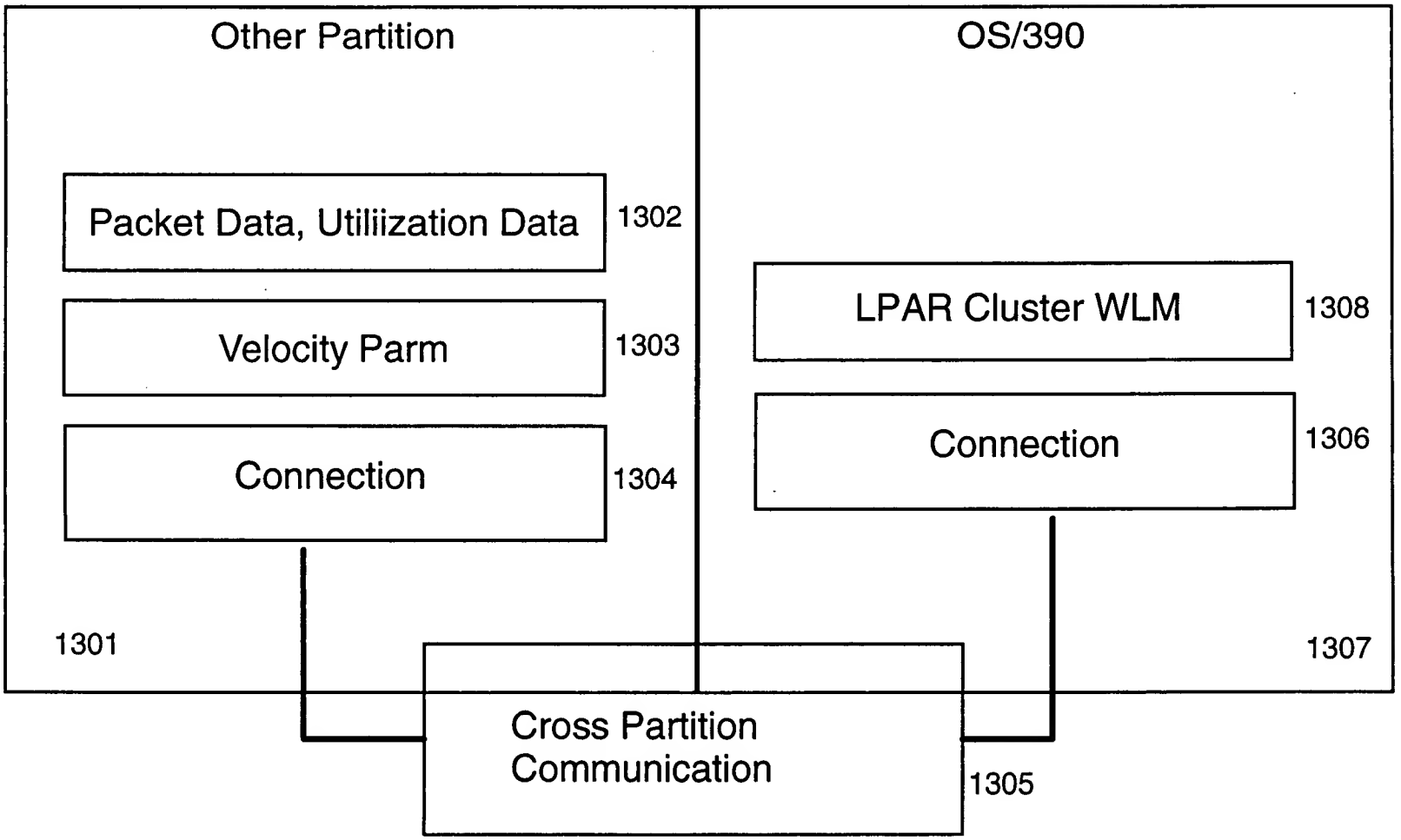
Other Partition
OS/390
Packet Data, Utiliization Data
1302
Velocity Parm
1303
Connection
1304
LPAR Cluster WLM
1308
Connection
1306
1301
1307
Cross Partition
Communication
1305

Figure 13

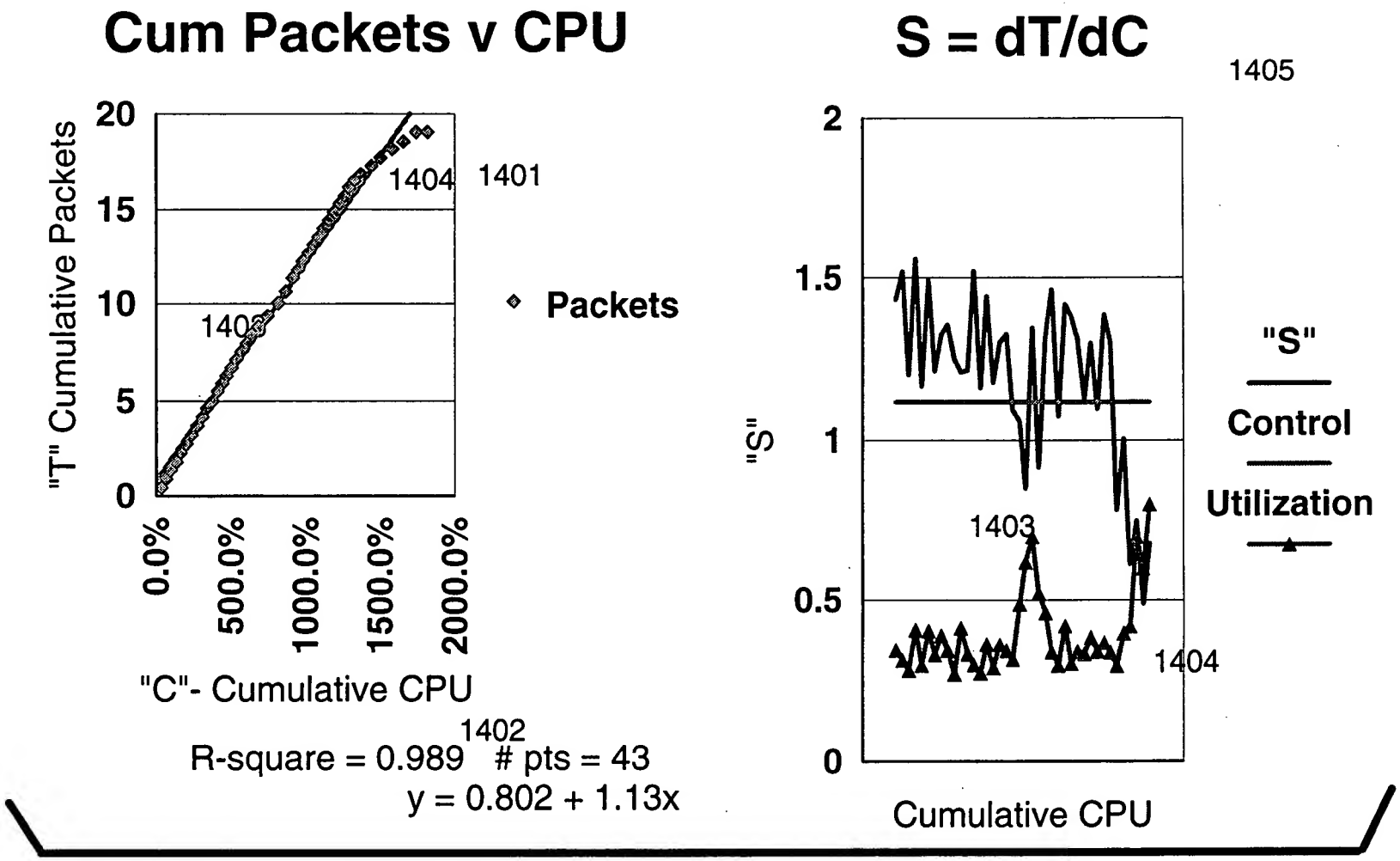
Cum Packets v CPU
"T" Cumulative Packets
20
15
10
5
0
1404
1401
1402
Packets
0.0%
500.0%
1000.0%
1500.0%
2000.0%
"C"- Cumulative CPU
R-square = 0.989
# pts = 43
y = 0.802 + 1.13x
S = dT/dC
1405
"S"
2
1.5
1
0.5
0
1403
1404
"S"
Control
Utilization
Cumulative CPU

Figure 14

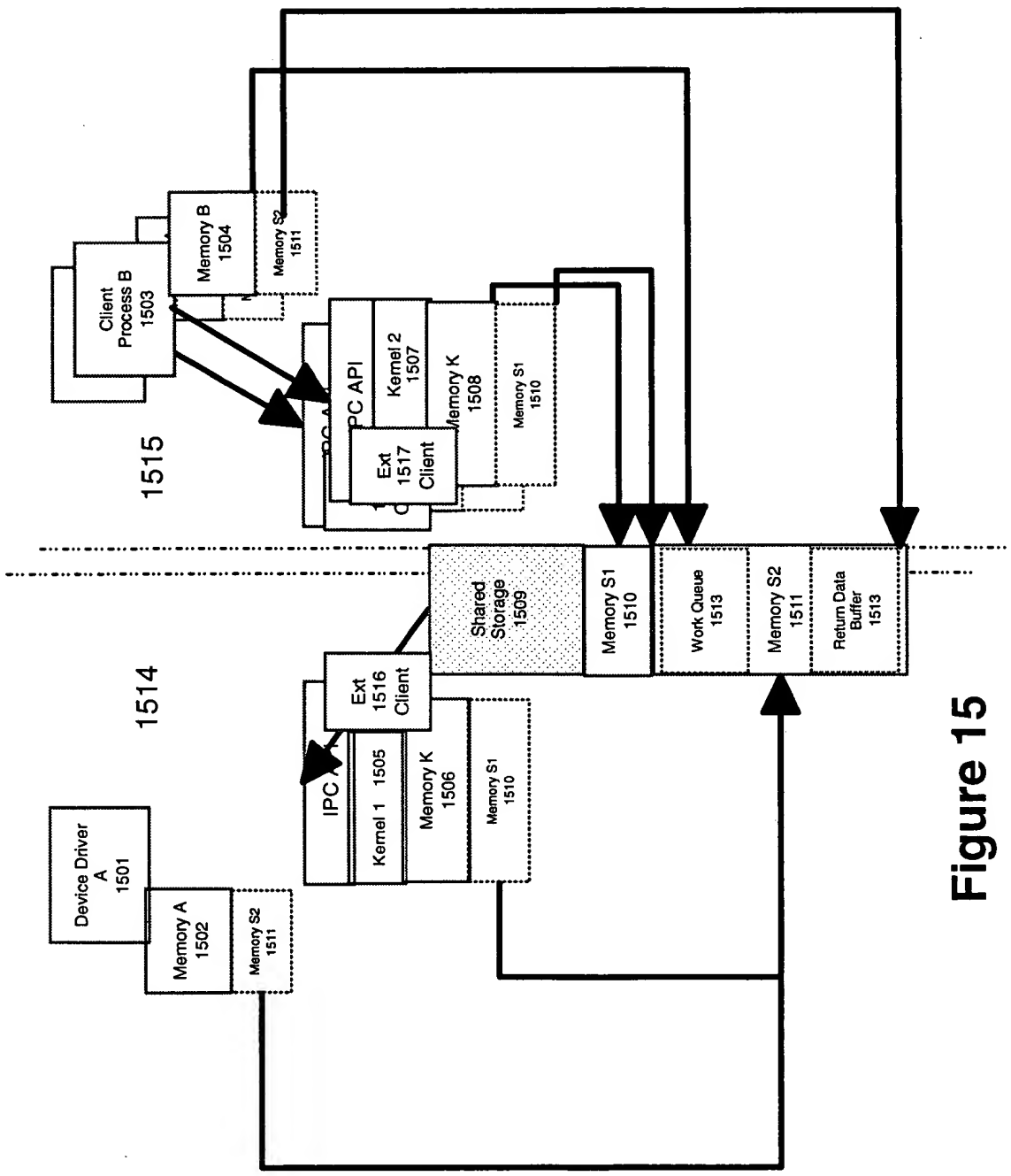
Client Process B 1503
Memory B 1504
Memory S2 1511
1515
IPC API
Kernel 2 1507
Memory K 1508
Memory S1 1510
Ext 1517 Client
Shared Storage 1509
Memory S1 1510
Work Queue 1513
Memory S2 1511
Return Data Buffer 1513
1514
Ext 1516 Client
IPC A
Kernel 1 1505
Memory K 1506
Memory S1 1510
Device Driver A 1501
Memory A 1502
Memory S2 1511

Figure 15

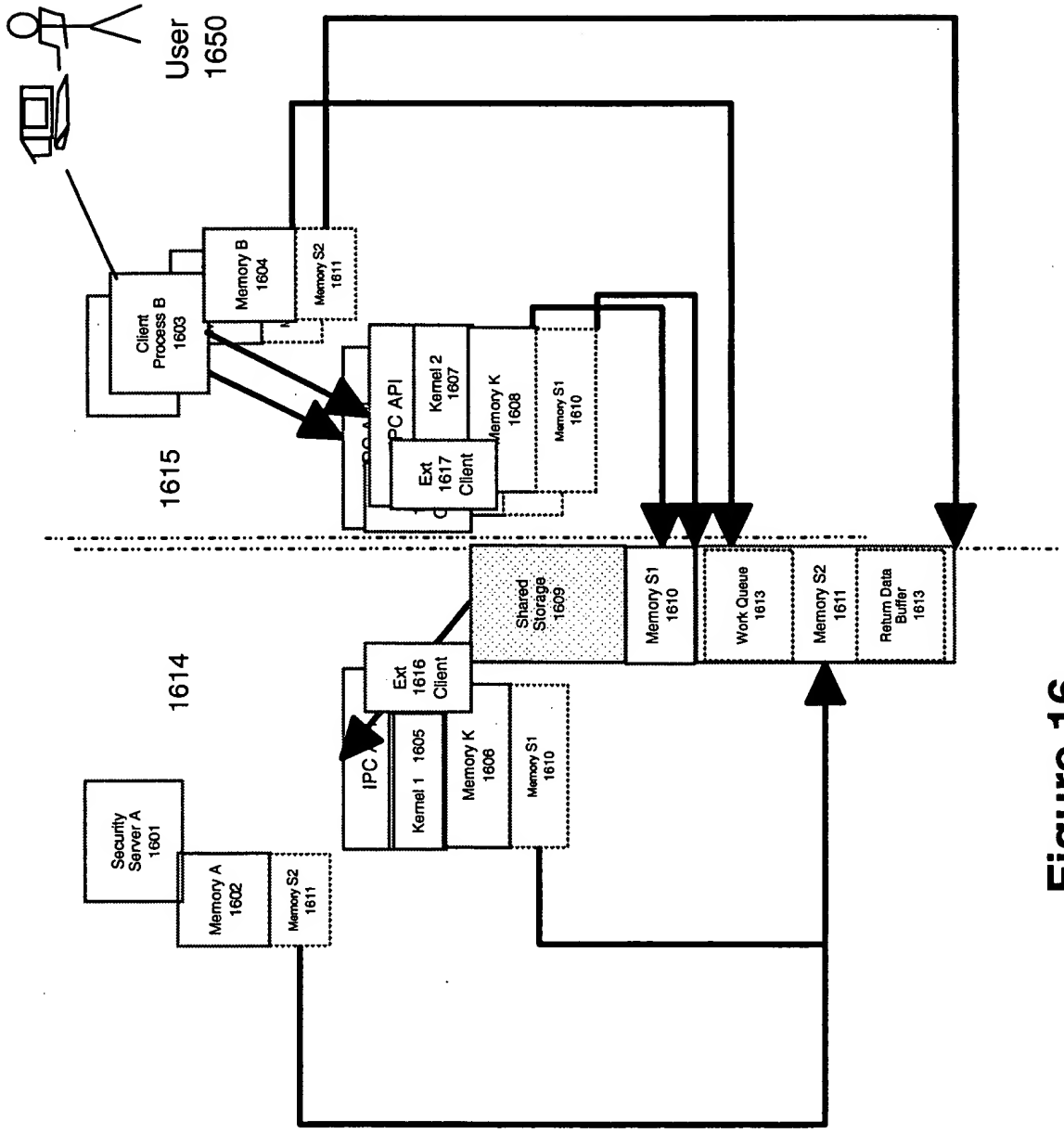
User
1650
Client Process B 1603
Memory B 1604
Memory S2 1611
1615
IPC API
Kernel 2 1607
Memory K 1608
Memory S1 1610
Ext 1617 Client
Shared Storage 1609
Memory S1 1610
Work Queue 1613
Memory S2 1611
Return Data Buffer 1613
1614
Ext 1616 Client
IPC
Kernel 1 1605
Memory K 1606
Memory S1 1610
Security Server A 1601
Memory A 1602
Memory S2 1611

Figure 16